CLAIMS

[00393]   What is claimed is:

[00394]   1. A method of identifying a toxicologically relevant canine gene comprising the steps of:

[00395]   (a) obtaining a gene expression profile of untreated canine cells;

[00396]   (b) obtaining a gene expression profile of canine cells treated with an agent; and

[00397]   (c) comparing the gene expression profile of untreated canine cell with the gene expression profile of the treated canine cells to obtain a gene expression profile indicative of a toxicological response.

[00398]   2. The method according to claim 1 wherein the canine cells are kidney cells.

[00399]   3. The method according to claim 2 wherein the kidney cells are MDCK cells.

[00400]   4. The method according to claim 1 wherein the canine cells are isolated from a biological sample.

[00401]   5. The method according to claim 1 wherein the gene expression profile is obtained by:

[00402]   (a) providing canine cells;

[00403]   (b) dividing said cells into two groups;

[00404]   (c) using the first group of canine cells as a control group;

[00405]   (d) exposing the second group of canine cells to an agent;

[00406]   (e) isolating RNA from the first and second groups of canine cells;

[00407]   (f) generating double stranded cDNA from said RNA;

[00408]   (g) labeling said cDNA;

[00409]   (h) resolving said cDNA on a gel; and

[00410]   (i) comparing intensity of bands between the group of cells or tissue exposed to said agent and the group of cells or tissue not exposed to said agent.

[00411]   6. The method according to claim 5 wherein the gene expression profile is stored in a database.

[00412]   7. The method according to claim 1 wherein the gene expression profile is obtained by transcriptome profiling.

[00413]   8. The method according to claim 1 wherein said agent is an agent listed in Table 10.

[00414]   9. A method of isolating canine genes indicative of a toxicological response to an agent comprising the steps of:

[00415]   (a) providing sequences of mammalian non-canine genes associated with toxicological responses;

[00416]   (b) providing primers homologous to said genes; and

[00417]   (c) using said primers to amplify canine genes from a canine cDNA library.

[00418]   10. The method according to claim 9 wherein the mammalian non-canine gene is a human gene.

[00419]   11. The method according to claim 9 wherein the mammalian non-canine gene is a rat gene.

[00420]   12. A method for determining a toxicological response to an agent comprising the steps of:

[00421]   (a) exposing cells to an agent;

[00422]   (b) obtaining a first gene expression profile from said cells;

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[00423]   (c) comparing the first gene expression profile with a gene expression profile of toxicologically relevant canine genes; and

[00424]   (d) determining if the first gene expression profile is indicative of a toxicological response.

[00425]   13. The method according to claim 12 wherein at least one gene expression profile of a toxicologically relevant canine gene is stored in a database.

[00426]   14. The method according to claim 12 wherein said toxicological response is selected from the group consisting of a cellular response, pathological change, and histological change.

[00427]   15. A method for determining a toxicological response in an organ to an agent comprising the steps (a) - (c) according to claim 12 and further comprising an additional step of determining if the first gene expression profile is indicative of a toxicological response in an organ.

[00428]   16. The method according to claim 15 wherein said toxicological response is a change in physiological function of the organ.

[00429]   17. A method for screening an agent for a potential toxicological response comprising the steps of:

[00430]   (a) exposing cells to an agent;

[00431]   (b) obtaining a first gene expression profile from said cells;

[00432]   (c) comparing the first gene expression profile with a gene expression profile of toxicologically relevant canine genes to determine if the first gene expression profile is indicative of a toxicological response in genes associated with toxic responses.

[00433]　18.　The method according to claim 17 wherein at least one gene expression profile of a toxicologically relevant canine gene is stored in a database.

[00434]　19.　The method according to claim 17 wherein said agent is a drug.

[00435]　20.　The method according to claim 17 wherein said agent is a pharmaceutical composition.

[00436]　21.　A method for generating a canine array comprising isolating at least ten canine genes which are indicative of a toxicological response and attaching said genes to a substrate.

[00437]　22.　The method according to claim 21 wherein said substrate is a solid substrate.

[00438]　23.　The method according to claim 22 wherein said solid substrate comprises glass.

[00439]　24.　An array comprising of at least ten canine toxicological response genes or a portion thereof immobilized on a substrate.

[00440]　25.　The array according to claim 24 wherein said substrate is a solid substrate.

[00441]　26.　The array according to claim 25 wherein said solid substrate comprises glass.

[00442]　27.　The array according to claim 24 wherein said genes are attached to said substrate by covalent linkage.

[00443]   28. The array according to claim 24 wherein said genes or portions thereof are capable of hybridization to expressed nucleic acids derived from a cell and are capable of indicating a toxic response of the cell to said agent.

[00444]   29. The array according to claim 24 wherein said genes have a gene expression indicative of toxicological response to an agent listed in Table 10.

[00445]   30. The array according to claim 24 comprising at least 10 canine toxicological genes or a portion thereof.

[00446]   31. The array according to claim 24 comprising at least 25 canine toxicological genes or a portion thereof.

[00447]   32. The array according to claim 24 comprising at least 50 canine toxicological genes or a portion thereof.

[00448]   33. The array according to claim 24 comprising at least 100 canine toxicological genes or a portion thereof.

[00449]   34. The array according to claim 24 comprising at least 250 canine toxicological genes or a portion thereof.

[00450]   35. The array according to claim 24 comprising at least 500 canine toxicological genes or a portion thereof.

[00451]   36. The array according to claim 24 comprising at least 750 canine toxicological genes or a portion thereof.

[00452]   37. The array according to claim 24 comprising at least 1000 canine toxicological genes or a portion thereof.

[00453]   38. An array comprising at least 10 genes of Table 8.

[00454]   39. An array comprising at least 10 genes of Table 9.

[00455]   40. A method for obtaining a gene expression profile comprising exposing a population of cells to an agent, obtaining cDNA from said population of cells, labeling said cDNA, and contacting said cDNA with the array according to claim 20.